Trend Study 25A-10-04

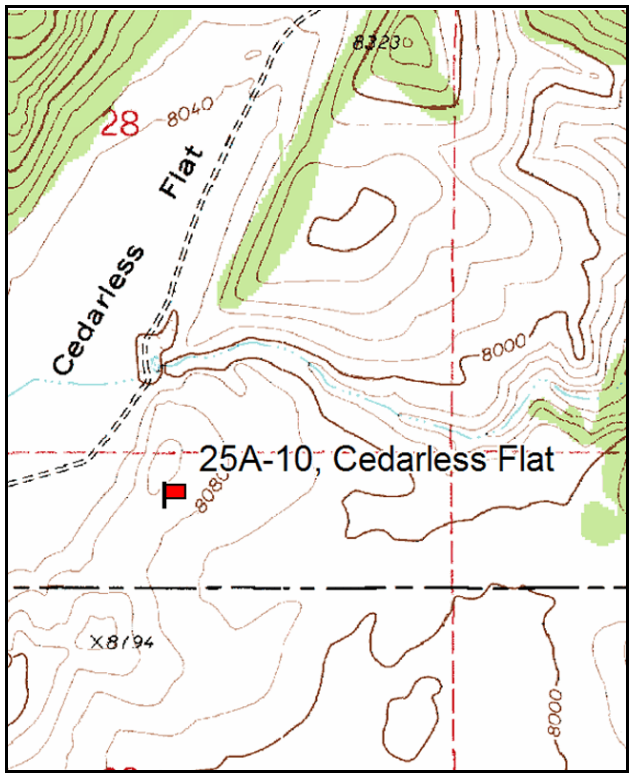
Study site name: Cedarless Flat . Vegetation type: Wyoming Big Sagebrush .

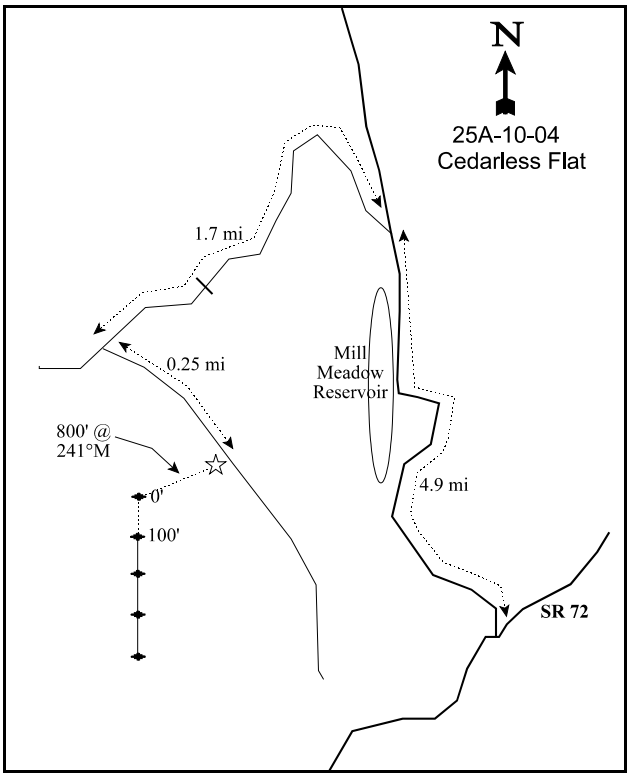
Compass bearing: frequency baseline 165 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From Fremont, travel northeast on SR72 for 2.25 miles to a major fork (the sign says Mill Meadow Reservoir). Turn left and proceed 4.5 miles past the reservoir to Fremont Creek. Cross the bridge and go 0.4 miles to a fork. Bear left on the Mytoge Road and go 1.1 miles to a cattleguard in Cedarless Flat. From the cattleguard, go 0.6 miles to a fork. Turn left and go exactly 0.25 miles to a witness post on the south side of the road. From the witness post, go 800 feet at 241°M to the 0 ft baseline stake. The baseline stake is marked with a red browse tag number 407.





Map Name: Forsyth Reservoir, Utah

Diagrammatic Sketch

Township 26S , Range 3E , Section 33

GPS: NAD 27, UTM 12S 4262560 N, 448847 E

DISCUSSION

Cedarless Flat - Trend Study No. 25A-10

The Cedarless Flat transect is located on a sagebrush hill that is part of critical deer winter and spring range. The elevation is 8,080 feet with a southeast aspect. The land is managed by the Forest Service and has had a history of overgrazing. Better early spring range is needed to help alleviate depredation by big game on the agricultural lands around Fremont. The area was chained and seeded in 1987 to reduce sagebrush and increase availability of the needed succulent forbs and cool season grasses. Several areas were excluded from the treatment to retain sage grouse habitat. By 1999, treatment boundaries were nearly indistinguishable. This area is within the UM Creek allotment which is grazed in the spring for generally two weeks from June 1 to June 15 as conditions permit. Pellet group data from the site estimated 7 deer, 21 elk, and 4 cow days use/acre (17 ddu/ha, 52 edu/ha, 10 cdu/ha) in 1999. In 2004, pellet group data estimated 33 deer, 5 elk, and 3 cow days use/acre (81 ddu/ha, 12 edu/ha, 7 cdu/ha). Escape and thermal cover is limited to thick stands of juniper approximately one-fourth mile away.

The soil is moderately shallow, compacted and relatively stable. Effective rooting depth is estimated at just over 14 inches. It has a clay loam texture with a slightly alkaline pH (7.4). Phosphorus is limited at 7 ppm. Values less than 10 ppm may limit plant development and growth. Erosion is limited by pavement and rocks, which are common on the soil surface. Litter cover is low, but the armored surface prevents erosion from being a problem. Vegetation cover decreased in 2004, which resulted in high pavement cover.

Wyoming big sagebrush is the dominant browse species. Density has declined with each reading since the study was established in 1985. Density was high at 8,798 plants/acre in 1985, prior to the treatment. After treatment density declined by 25% to 6,599 plants/acre in 1991. In 1999, density was 5,440 plants/acre, but some of the change in density between 1991 and 1999 would be partly due to the much larger sample used in 1999. Five years later in 2004, density declined by 21% to 4,320 plants/acre. In 1999, the population was very healthy with very low decadence at 4% with 31% of the population classified as young. By 2004, only 5% of the population was young and decadence had increased to 38%. Utilization has been moderate each time the study was monitored. Drought conditions have been detrimental to this population. A few black sagebrush plants are also found on this site. Broom snakeweed density declined 59% between 1999 and 2004.

Herbaceous vegetation was particularly sparse and insignificant prior to the treatment. Sum of nested frequency for grasses more than doubled after treatment, but has decreased with each subsequent reading. Blue grama and seeded Russian wildrye are the most common grasses, along with crested wheatgrass and Indian ricegrass. Cover of perennial grasses decreased from 13% in 1999 to 4% by 2004. Perennial forbs have never been very abundant since the study was established in 1985. Slimleaf goosefoot (an annual species) had over 6% cover in 2004 and had not been previously sampled. It made up 96% of the total forb cover, with Fremont goosefoot making up the remainder of the forb cover.

1985 APPARENT TREND ASSESSMENT

Soil condition appears stable while vegetative trend is down. The age structure and general vigor of the sagebrush indicates a declining population. Cool season grasses and forbs and valuable forage plants are conspicuously absent.

1991 TREND ASSESSMENT

Soil condition is still considered stable even with the slight increase in percent bare ground (still relatively low for a Wyoming sagebrush-grass site), for the area was chained and seeded in 1987. The treatment did initially establish more grasses on the site. The browse trend is slightly up because the treatment thinned the sagebrush

and it shows good vigor and a much lower percent of the population is decadent. The herbaceous understory is greatly improved with many cool season grasses established since treatment.

TREND ASSESSMENT
soil - stable (3)
browse - slightly up (4)
herbaceous understory - up (5)

1999 TREND ASSESSMENT

Trend for soil is still considered stable. Percent cover of bare ground is similar to 1991 estimates, while litter cover has declined slightly. This is primarily due to the deterioration of chaining debris. Herbaceous cover is still moderately abundant and erosion is not a serious problem. Trend for browse is stable. Density of the key species, Wyoming big sagebrush, has declined 18% but some of the difference is likely due to the much larger sample used in 1999. Utilization is moderate to heavy but vigor is good and percent decadence has declined from 14% to 4%. Young plants are abundant and account for 31% of the population. This combined with the low number of decadent plants would indicate an expanding population. One negative aspect of the browse trend is the increase in broom snakeweed to 4,240 plants/acre. Only 599 plants/acre were estimated prior to the treatment in 1985 and no broom snakeweed was encountered in 1991. Trend for the herbaceous understory is down slightly. Sum of nested frequency for perennial grasses has declined slightly, yet more importantly, sum of nested frequency for the seeded crested wheatgrass has declined significantly with frequency of the less desirable, low growing, warm season blue grama, has increased significantly. Most of the seeded grasses were found growing only within the protection of sagebrush canopies, which would indicate excessive livestock spring grazing pressure. Forbs are still rare.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - down slightly (2)
winter range condition (DC Index) - 69 (excellent) Wyoming big sagebrush type

2004 TREND ASSESSMENT

The trend for soil is stable. Relative percent bare ground is stable. Pavement has increased slightly and this is likely due to lower vegetation cover, which exposes more pavement. The armored soil surface protects it from erosion. The browse trend is slightly down. The key species, Wyoming big sagebrush, has decreased in density and cover since 1999. Decadence has increased from 4% to 38%, while the percent of the population classified as young is down to only 5%. Drought conditions have been harmful to this sagebrush population. Positively, broom snakeweed density also has declined. The herbaceous understory trend is also down. The sum of nested frequency for perennial grasses has declined since 1991, and declined 40% since 1999. Blue grama declined significantly in nested frequency. Perennial forbs are still rare and annual goosefoot species are very common.

TREND ASSESSMENT
soil - stable (3)
browse - slightly down (2)
herbaceous understory - down (1)
winter range condition (DC Index) - 26 (poor to fair) Wyoming big sagebrush type

HERBACEOUS TRENDS --
Management unit 25A, Study no: 10

Type	Species	Nested Frequency				Average Cover %	
		'85	'91	'99	'04	'99	'04
G	Agropyron cristatum	$_{a}$-	$_{c}$155	$_{b}$41	$_{b}$27	1.14	.69
G	Bouteloua gracilis	$_{a}$70	$_{b}$104	$_{c}$193	$_{b}$105	8.30	1.89
G	Bromus inermis	$_{a}$-	$_{c}$55	$_{b}$12	$_{a}$-	.22	-
G	Bromus tectorum (a)	-	3	-	-	-	-
G	Carex spp.	$_{a}$-	$_{a}$-	$_{b}$15	$_{ab}$14	.07	.07
G	Elymus junceus	$_{a}$-	$_{c}$84	$_{bc}$61	$_{b}$51	2.59	1.41
G	Oryzopsis hymenoides	$_{ab}$15	$_{a}$15	$_{b}$36	$_{ab}$18	.72	.08
G	Sitanion hystrix	$_{b}$97	$_{b}$75	$_{a}$29	$_{a}$18	.20	.12
G	Stipa lettermani	1	5	4	-	.01	-
Total for Annual Grasses		0	3	0	0	0	0
Total for Perennial Grasses		183	493	391	233	13.29	4.28
Total for Grasses		183	496	391	233	13.29	4.28
F	Androsace septentrionalis (a)	-	-	$_{b}$11	$_{a}$-	.02	-
F	Arabis demissa	$_{b}$9	$_{ab}$2	$_{ab}$3	$_{a}$-	.00	-
F	Astragalus lentiginosus	4	-	5	1	.03	.00
F	Chenopodium fremontii (a)	-	-	$_{a}$-	$_{b}$25	-	.27
F	Chenopodium leptophyllum(a)	-	-	$_{a}$-	$_{b}$236	-	6.38
F	Cryptantha spp.	5	3	1	-	.03	-
F	Descurainia pinnata (a)	-	-	-	3	-	.00
F	Eriogonum cernuum (a)	-	-	-	3	-	.00
F	Eriogonum ovalifolium	5	1	-	-	-	-
F	Erigeron pumilus	4	1	-	-	-	-
F	Phlox longifolia	1	5	1	2	.00	.00
F	Senecio multilobatus	5	-	-	-	-	-
Total for Annual Forbs		0	0	11	267	0.02	6.66
Total for Perennial Forbs		33	12	10	3	0.07	0.01
Total for Forbs		33	12	21	270	0.10	6.67

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Management unit 25A, Study no: 10

Type	Species	Strip Frequency		Average Cover %	
		'99	'04	'99	'04
B	Artemisia nova	2	4	-	.01
B	Artemisia tridentata wyomingensis	83	83	9.25	7.77
B	Chrysothamnus viscidiflorus viscidiflorus	9	10	.15	.15
B	Gutierrezia sarothrae	56	42	.38	.26
B	Opuntia spp.	2	5	.03	.03
B	Pediocactus simpsonii	3	2	.03	.03
Total for Browse		155	146	9.84	8.27

CANOPY COVER, LINE INTERCEPT --
Management unit 25A, Study no: 10

Species	Percent Cover
	'04
Artemisia tridentata wyomingensis	11.51
Gutierrezia sarothrae	.30
Opuntia spp.	.03

KEY BROWSE ANNUAL LEADER GROWTH --
Management unit 25A, Study no: 10

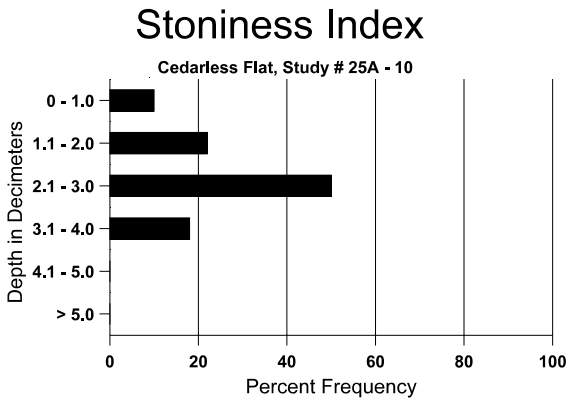
Species	Average leader growth (in)
	'04
Artemisia tridentata wyomingensis	1.8

BASIC COVER --
Management unit 25A, Study no: 10

Cover Type	Average Cover %			
	'85	'91	'99	'04
Vegetation	1.50	4.50	23.21	18.60
Rock	6.00	8.00	9.06	7.65
Pavement	51.00	46.50	27.46	44.11
Litter	32.50	22.75	13.73	19.38
Cryptogams	0	0	.00	0
Bare Ground	9.00	18.25	20.26	23.65

SOIL ANALYSIS DATA --
Management unit 25A, Study no: 10, Study Name: Cedarless Flat

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	ds/m
14.1	62.3 (10.1)	7.4	43.3	25.4	31.3	2.6	7.0	112.0	0.6



PELLET GROUP DATA --
Management unit 25A, Study no: 10

Type	Quadrat Frequency '99	Quadrat Frequency '04	Days use per acre (ha) '99	Days use per acre (ha) '04
Rabbit	9	40	-	-
Elk	6	2	21 (52)	5 (12)
Deer	8	17	7 (17)	33 (81)
Cattle	3	1	4 (10)	3 (7)
Antelope	-	2	-	-

BROWSE CHARACTERISTICS --
Management unit 25A, Study no: 10

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
Artemisia nova												
85	**0**	-	-	-	-	-	0	0	-	-	0	-/-
91	**0**	-	-	-	-	-	0	0	-	-	0	-/-
99	**80**	-	-	80	-	-	0	0	-	-	0	6/15
04	**200**	-	-	200	-	-	10	0	-	-	0	10/19

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
Artemisia tridentata wyomingensis												
85	**8798**	533	1066	5266	2466	-	37	8	28	.68	2	18/20
91	**6599**	933	1333	4333	933	-	22	4	14	-	0	12/15
99	**5440**	40	1680	3540	220	320	52	15	4	3	3	13/22
04	**4320**	320	220	2480	1620	680	36	10	38	26	27	13/23
Chrysothamnus viscidiflorus viscidiflorus												
85	**0**	-	-	-	-	-	0	0	0	-	0	-/-
91	**66**	-	66	-	-	-	0	0	0	-	0	-/-
99	**240**	-	-	220	20	-	17	8	8	8	8	7/12
04	**240**	80	-	240	-	20	0	0	0	-	0	7/13
Gutierrezia sarothrae												
85	**599**	-	133	466	-	-	0	0	-	-	0	8/4
91	**0**	-	-	-	-	-	0	0	-	-	0	-/-
99	**4240**	100	2200	2040	-	-	0	0	-	-	0	4/4
04	**1720**	-	80	1640	-	20	0	0	-	-	0	5/7
Opuntia spp.												
85	**66**	66	-	-	66	-	0	0	100	-	0	-/-
91	**399**	-	133	266	-	-	0	0	0	-	0	2/4
99	**80**	-	20	60	-	-	0	0	0	-	0	3/10
04	**100**	-	20	80	-	-	0	0	0	-	0	2/9
Pediocactus simpsonii												
85	**0**	-	-	-	-	-	0	0	-	-	0	-/-
91	**0**	-	-	-	-	-	0	0	-	-	0	-/-
99	**60**	-	20	40	-	-	0	0	-	-	0	2/4
04	**40**	-	-	40	-	-	0	0	-	-	0	1/3